



Standard Test Method for Protective Clothing Material Resistance to Puncture¹

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^{ε1} NOTE—Designation editorially updated in December 2013.

1. Scope

1.1 This test method determines the puncture resistance of a protective clothing material specimen by measuring the force required to cause a pointed puncture probe to penetrate through the specimen. This test method describes three protocols that may be used: Method A, Method B, and Method C.

1.1.1 Method A requires the use of Probe A only. The probe used for testing shall be recorded in the test report.

1.1.1.1 Probe A may be used to measure puncture resistance for the following types of materials:

- (1) Elastomeric materials
- (2) Textiles
- (3) Coated materials

1.1.2 Method B requires the use of Probe B. The probe used for testing shall be recorded in the test report.

1.1.2.1 Probe B may be used to measure puncture resistance for the following types of materials:

- (1) Textiles
- (2) Coated materials

NOTE 1—Probe B is not suited for measuring the puncture resistance of unsupported elastomeric materials.

1.2 The values stated in SI units are to be regarded as the standard. The values in inch-pound units in brackets are for information purposes only. The values stated in each system may not be exact equivalents; therefore, each system must be used independently of the other, without combining values in any way.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

¹ This test method is under the jurisdiction of ASTM Committee F23 on Personal Protective Clothing and Equipment and is the direct responsibility of Subcommittee F23.20 on Physical.

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2. Referenced Documents

2.1 *ASTM Standards*:²

- D2582 Test Method for Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting
- D3767 Practice for Rubber—Measurement of Dimensions

3. Terminology

3.1 *Definitions*:

3.1.1 *protective clothing material, n*—any element, constituent, or substance from which protective clothing is composed or can be made.

4. Summary of Test Method

4.1 A material specimen is placed in a stationary support assembly that is in turn affixed to the lower arm of a tension testing machine.

4.2 A pointed puncture probe of set dimensions is mounted to the test fixture and the whole assembly is attached to the compression cell of the testing machine.

4.3 The puncture probe is moved at a constant velocity until it punctures the material specimen.

4.4 The force required to puncture the material specimen is measured by the compression cell. The elongation (or deflection) of the specimen prior to puncture is also measured. The reported puncture resistance is the average of twelve test replicates.

5. Significance and Use

5.1 This test method evaluates puncture resistance of protective clothing materials which may include plastics or elastomeric films, coated fabrics, flexible materials, laminates, or textile materials.

5.2 This test method is not intended to measure puncture resistance of all types of punctures encountered using protective clothing material. This test method involves a procedure

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.